Details on IEQ Measurements

Air monitoring equipment was deployed for 3-5 days in the main living area by the IAQS and research coordinator, away from areas where it could be handled by children. A Dusttrak 8530 (TSI, St. Paul, MN, USA) was used to log $PM_{2.5}$ concentrations by laser photometry and was outfitted with a 37mm Teflon in-line filter to collect gravimetric measurements corresponding to each continuous measurement. A Discmini (Testo, Lenzkirch, Germany) was used to log ultrafine (UFP) particle number concentrations; a Vaisala GMW93 CO_2 Sensor (Vantaa, Finland) was used to measure CO_2, and attached to a HOBO data logger (Onset, Cape Cod, MA, USA); a separate HOBO data logger was used to collect temperature and relative humidity data; Formaldehyde and acetaldehyde were measured by UMEX 100 Passive Samplers (SKC Inc. Eighty Four, PA, USA), with 2,4-dinitrophenylhydrazine (DNPH) as the reagent. The samples were analyzed by high performance liquid chromatography (HPLC) using US EPA Compendium Method TO-11A. Volatile Organic Chemicals (VOCs) were measured by deploying thermal desorption tubes containing Carbopack B 60/80 sorbent (Perkin Elmer, Inc., Shelton, CT, USA), and subsequently analyzed by GC-MS according to EPA standard TO-17. All continuous monitors were set to log 5-minute averages. Outdoor measurements of $PM_{2.5}$, temperature, and relative humidity were collected in each community in a central location.

To determine the contribution of wood smoke to $PM_{2.5}$ concentrations, the Teflon filters were analyzed for the monosaccharide anhydride levoglucosan.[1-5] Levoglucosan is a product of incomplete combustion and pyrolysis of cellulose and hemicelluloses and is a major constituent of wood smoke.[6]

Settled dust samples were collected from the living room floor. The floor samples were collected using an x-cell 100 dust sock fitted to the hose of an Omega HEPA vacuum cleaner (Midwest Filtration Company, Cincinnati, OH, USA) with technicians aiming to collect at least 2 g of dust per sample,

typically from over 1-2 m^2 of flooring. This sampling protocol has been demonstrated to be quantitative for allergens. Samples were transported and stored under air dry conditions and the dust sieved to <300 and >300 micrometers and weighed. The dust <300 micrometers was analyzed for endotoxin, house dust mite, allergens and 1,3-beta-D-glucan. The latter was used to approximate house fungal load. Endotoxin was analyzed by the limulus amoebocyte lysate method according to the manufacturer's instructions (Associates of Cape Cod, Falmouth, MA, USA). Fungal glucan was analyzed by the Factor G-based LAL assay.[7] The dust-mite allergens Der f1 (Dermataphagoides farinae) and Der p1 (Dermataphagoides pteronyssimus) were extracted with borate buffer and determined with a monoclonal-based enzyme immunoassay from Indoor Biotechnologies (Charlottesville, VA, USA).[8] Glucan and endotoxin load were calculated by dividing their weights by the surface area of flooring vacuumed (m^2).[9,10]

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